Milwaukee / Waukesha County Consortium
For Emergency Public Health Preparedness - #11

Pandemic Influenza Preparedness & Response

(11/15/05)

Introduction

Influenza is a viral illness of the respiratory tract characterized by rapid onset of high fever, chills, sore throat, runny nose, severe headache, nonproductive cough and intense body aches. The virus is spread through contact with droplets from the nose and throat of an infected person during coughing and sneezing. Influenza is highly contagious and is responsible for annual epidemics in the United States and in other countries. In the US, epidemics typically occur from December to April, resulting in 200,000 hospitalizations and 36,000 deaths from influenza infection or from secondary complications.

There are two types of influenza viruses that cause significant disease in humans: type A and type B. Influenza A viruses are composed of two major antigenic structures which are essential to the production of influenza vaccines and the induction of immunity: hemagglutinin (H) and neuraminidase (N). These two components define the virus subtype.

Both influenza A and B viruses can undergo the minor genetic variations known as antigenic drift. Antigenic drift is a gradual change caused by minor point mutations in the viral genes and results in small changes to the surface proteins of the influenza virus. Antigenic drift occurs continuously and is the reason that the make-up of the influenza vaccine is changed almost every year.

Influenza A virus is unique in that it can infect a variety of animals; wild birds are the natural reservoir for influenza A. It is also unique in that it can undergo the major genetic reassortment known as antigenic shift. This sudden change happens infrequently and often occurs as a result of a recombination of human influenza A with an animal influenza A virus. This recombination results in a new subtype of influenza A to which the human population has little to no immunity. An antigenic shift is almost always followed by an influenza pandemic. A pandemic is a worldwide outbreak of a disease usually affecting a large number of people.

A novel influenza strain is a new strain of influenza that is significantly different from what the public has been exposed to either through prior infection or vaccination that is capable of causing increased morbidity and morality. During the last century, three novel influenza A strains have evolved from animal strains from birds or pigs to cause pandemics:

- The “Spanish” influenza pandemic of 1918 killed over 500,000 people in the United States and had a worldwide mortality of 20-40 million.
- In 1957, Asian influenza caused approximately 40,000 deaths in the United States.
- During the Hong Kong pandemic of 1968-69, mortality in the United States was estimated at 30,000 deaths with 51 million Americans affected by influenza and a total economic burden of $3.9 billion.

Based on observations from previous pandemics, the Centers for Disease Control and Prevention (CDC) has estimated that the economic losses in the United States associated with the next pandemic will range from approximately $71-166 billion. These estimates are based on the attack rate and associated morbidity and mortality.

The impact of an influenza pandemic on the healthcare system could be devastating. In the United States, between 40 and 100 million people will become clinically ill; 18 to 45 million will require outpatient care; 300,000 to 800,000 persons will be hospitalized and between 88,000 and 300,000 people will die. The potential for high levels of morbidity and mortality as well as the significant disruption to society make planning for the next influenza pandemic imperative. The data presented in Tables 1 and 2 are based on an estimate obtained using CDC’s FluAid software and describe the predicted outcome of an influenza pandemic in the United States, in Wisconsin and in the Milwaukee/Waukesha Counties.

Table 1: Number of Persons Ill with Influenza if a Pandemic Were to Occur

Category	United States	Wisconsin	Milwaukee/Waukesha Counties
Clinically Ill	40-100 million	1.9 million	~700,000
Outpatients	18-45 million	1 million	346,361
Hospitalizations	300-800 thousand	22,000	6,766
Deaths	88-300 thousand	8,000	2,029

Table 2: Distribution of Influenza Morbidity (Inpatient & Outpatient) and Mortality in Milwaukee/Waukesha Counties by Age Group

	Age Groups	15%	25%	35%
Deaths:	0-18 years	78	130	183
	19-64 years	455	758	1,062
	65+ years	336	560	784
Hospitalizations:	0-18 years	424	707	990
	19-64 years	1,563	2,605	3,647
	65+ years	912	1,521	2,129
Outpatient Visits:	0-18 years	37,318	62,197	87,075
	19-64 years	91,226	152,043	212,860
	65+ years	19,897	33,161	46,426

It is important to remember that although the first wave of the pandemic may last 1- 3 months; the entire pandemic may last 2-3 years. Although antivirals will be available, there may not be an adequate supply for all citizens during the entire pandemic period. Vaccine (other than experimental vaccines currently being tested) is not expected to be available until the pandemic is underway.

In planning for and responding to an influenza pandemic, the National Incident Management System (NIMS) will be utilized to assure coordination of resources. Administrative and medical decision makers will work in coordination with the Milwaukee/Waukesha County Consortium for Emergency Public Health Preparedness serving as Unified Area Command.

Table 3: 2005 WHO Pandemic Phase Descriptions

Interpandemic Period:
Phase 1: No novel virus subtypes in humans; subtype that has caused human infection may be present in animals.
Phase 2: Circulating animal subtype poses substantial risk of human disease.
Pandemic Alert Period:
Phase 3: Human infection with new subtypes; no human to human spread or rare spread to close contacts.
Phase 4: Small clusters with limited human to human transmission; highly localized spread (virus probably is not well adapted to humans.)
Phase 5: Larger clusters; human to human spread still localized; virus increasingly better adapted to humans; not fully transmissible.
Pandemic Period:
Phase 6: Increase and sustained transmission in general population.
Post pandemic Period:
Debrief and evaluate pandemic activities and return to Interpandemic period.

Statutory and Operational Authority

The statutory authority for responding to an influenza pandemic can be found in the Public Health Emergency Plan (PHEP) Legal References Section.

Assumptions Regarding Medical Response Operations for Mass Care During an Pandemic Influenza

1. Infected persons will begin to present to healthcare provider offices, clinics and emergency departments thus infecting other patients and healthcare providers.

2. Clusters of symptoms in multiple populations will appear.

3. Uninfected people will seek diagnosis and treatment out of fear and will place themselves at risk for true infection.

4. Many geographic areas within Southeastern Wisconsin will be affected simultaneously.

5. Pandemic influenza will pose significant threats to human infrastructure responsible for critical community services due to widespread absenteeism. A 15% attack rate would be stressful for the community; 25% would disrupt community services and stress hospital and medical care facilities; 35% would be disastrous. [Do we really want to say this?]

6. There may be critical shortages of health care resources such as staffed hospital beds, mechanical ventilators, morgue capacity, temporary holding sites with refrigeration for storage of bodies and other resources.

7. An effective response to a pandemic influenza will require the coordinated efforts of a wide variety of organizations – private as well as public, health as well as non-health.

8. This plan, including the pandemic phases and consortium activities, should be read as if the pandemic is occurring locally. The State of Wisconsin Pandemic Influenza Plan or a Federal pandemic influenza plan may influence or alter how this local plan is implemented.

Public Health Responses to Pandemic Influenza Phases

Interpandemic Period (Phases 1-2)

Locally no new influenza virus subtype has been detected in humans (Phase 1). However, a circulating animal influenza virus may pose a risk of human disease (Phase2).

Command & Control:

1. Unified Area Command may convene utilizing appropriate Consortium members and partners.
2. Unified Area Command activities will be limited to monitoring reports of progress of the disease and surveillance to detect a case of novel virus in the Milwaukee/Waukesha County areas and/or Wisconsin.
3. Unified Area Command may establish a Planning Section to review and revise pandemic influenza preparedness and response activities (see Planning Section below).

Command Staff (Communication):

1. Relevant material will be distributed to Consortium partners and the general public regarding pandemic influenza activity, reporting, testing, isolation and quarantine and specimen submission. Notices will be posted on EMSystem, the Consortium website and distributed through SurvNet and WaukNet for healthcare partners.
2. Public Information Officers (PIO), in collaboration with the Unified Area Command, SLOH, MHD laboratory and the MHD Medical Advisor will:
    - Begin providing public information on the impending pandemic influenza outbreak
    - Assess communication needs and capacity
    - Develop criteria and procedures for requesting Consortium/DHFS communication assistance and develop mechanisms for coordinating the communication activities within the Consortium/State
    - Prepare public and professional pandemic influenza awareness information
    - Begin systematic review and testing of all health and media (English and non-English)
    - Communications

Logistics Section:

1. Unified Area Command will assure that local health agencies (LHA) will have necessary technical assistance to activate the Pandemic Influenza Plan including:
    - Information on the distribution of the Strategic National Stockpile (SNS) through mass clinics (See PHEP for Mass Clinic Plans)
    - Mass Clinic site selection
    - Mass Clinic supplies/Go-Kits
    - Mass burial site selections in coordination with local emergency management

Operations Section:

1. The Consortium Board will coordinate assessment and exercises of the Mass Clinic Plan.
2. Surveillance will include virologic and disease surveillance to detect the earliest appearance of a novel virus in the Milwaukee/Waukesha County areas using:
    - Southeast WI sentinel physician Influenza-Like Illness (ILI) data
    - State Laboratory of Hygiene (SLOH) and Milwaukee Health Department (MHD) Laboratory pneumonia and influenza mortality data
    - SLOH and MHD Weekly Influenza Antigen Report

- Hospital census
- School absenteeism
- Local University Health Center weekly ILI reports

3. MHD will monitor EMSystem to watch Emergency Department (ED) diversion status and hospital bed availability.
4. All LHAs will continue annual influenza and pneumonia vaccination program maintenance.
5. All LHAs within the Consortium will investigate any person who meets the existing case definition. This investigation will include collection of information about:
    - Client demographic information
    - Occupation
    - Disease onset
    - Symptoms
    - Travel and recreational history, including airline and flight number, if appropriate
    - Case contacts
    - Follow-up action including medical care, lab testing, isolation and quarantine

Planning Section (if convened within Unified Area Command will begin to):

1. Assess parameters for isolation and quarantine.
2. Review medical orders for antiviral medicines and vaccine.
3. Review the current case and contact definitions for pandemic influenza.
4. Develop mass burial planning and coroner agreements in coordination with local EM.

Pandemic Alert Period (Phases 3-5)

Locally a human infection would have occurred. Additional cases of influenza illness would be observed and human-to-human transmission is suspected. Small case clutters may develop into larger groupings. The risk of a pandemic is substantial.

Command & Control;

1. Unified Area Command will open the Public Health Command Center.
2. Unified Area Command will review components of the Public Health Emergency Plan, especially regarding the Pandemic Influenza Plan, Mass Clinic Plan and Personal Protective Equipment (PPE) Plan.
3. Unified Area Command will establish lines of communication with all area hospital Incident Command (IC). This communication includes all psychiatric hospitals, nursing homes and assisted living group homes.
4. EMS medical directors in Milwaukee and Waukesha Counties are updated by the Unified Area Command.
5. Unified Area Command will assess and coordinate the preparation of staffing needs of LHA's, healthcare facilities and labs.
6. Unified Area Command will determine the need for a Health and Safety Officer.

Command Staff (Communication):

1. Technical information, public information and press releases will be disseminated, including travel alerts, guidelines on limiting the spread of the disease and information about when and where to obtain medical care.
2. The PIO will plan the delivery of health information to hard-to-reach communities such as communities where English is a second language, the homeless, homebound people, etc.
3. Via both Communication staff to the media AND LHAs, all healthcare workers will be encouraged to practice Respiratory Hygiene/Cough Etiquette which includes:
    - Posting alerts in healthcare facilities instructing patients and visitors to inform personnel if they have symptoms of respiratory infection.
    - Providing tissues to patients and visitors to cover their nose and mouth when coughing or sneezing.
    - Assuring hand washing facilities and supplies are available to personnel, patients and visitors or provide dispensers of alcohol-based hand sanitizers.
    - Providing masks to those people who are coughing.
    - Encouraging coughing persons to sit at least 3 feet away from others.
    - Assure that healthcare personnel observe Droplet Precautions as well as Standard Precautions.

Logistics Section:

1. Unified Area Command will discuss prioritizations of laboratory services with SLOH and MHD labs.
2. Unified Area Command will advise local coroners and funeral directors to prepare for increases in the number of dead that they will have to handle.
3. Assess local supplies of antiviral agents, influenza vaccine, supplies and equipment.
4. Via Unified Area Command, request of the SNS (receiving antiviral medications or vaccine) should be considered.

Operations Section:

1. Unified Area Command will enhance monitoring reports of disease spread and urge surveillance partners to activate and augment surveillance systems.
2. MHD upon request of Unified Area Command will notify hospitals through EMSystem of the need to report the number of isolation beds, as well as the number of ICU beds, ventilator beds and pediatric beds every 12 hours.
3. All healthcare workers and emergency service personnel will be encouraged to obtain routine influenza immunizations.
4. Unified Area Command will communicate chemoprophylaxis treatment protocols with healthcare providers.

Planning Section:

1. Unified Area Command will work with DHFS, Milwaukee and Waukesha County Emergency Management and representatives from the private medical sector in administration coordination planning of vaccines and/or antivirals when they are available.
2. Unified Area Command, with the MHD Medical Advisor will review and update antiviral chemoprophylaxis and treatment protocols.

Finance & Administration Section:

1. All LHAs to begin tracking of time and expenditures toward the unified effort.
2. Unified Area Command will arrange for the purchase of pandemic influenza vaccine, if available, in collaboration with DHFS.

Pandemic Period (Phase 6)

Locally, the influenza illness continues to infect humans. Multiple waves of illness are likely. This Pandemic Period may last for years.

Command & Control:

1. Unified Area Command is fully activated with situation reports given by the Incident Commander to Command and General Staff every 12 hours.
2. Unified Area Command will notify LHA's, Emergency Management, local hospitals and their emergency departments to activate their pandemic influenza response plans via the Liaison Officer.
3. Lines of communication will be opened between the Unified Area Command and all medical providers via the Liaison Officer.
4. The Unified Area Command will activate state-wide Mutual Aid Agreements for needed staff and/or supplies, as well as request personnel from WEAVR, VOAD, American Red Cross, etc.

Command Staff (Communication):

1. The PIO will regularly provide press briefings in conjunction with a Joint Information Center, regarding the status of the epidemic, how to access medical care, isolation and quarantine information, location of mass clinics and other pertinent information.
2. The PIO will also inform hard-to-reach communities of the above information.

Logistics Section:

1. Hospitals are assessed for bed capacity, isolation rooms, High Efficiency Positive Airflow (HEPA) units and staffing.
2. MHD Medical Advisor will issue laboratory testing recommendations a random sampling of any person who fits the case definition of pandemic influenza.
3. The Unified Area Command in cooperation with DPH and CDC will provide necessary epidemiologic information and forms to LHA's for case management activities.
4. Unified Area Command requests Strategic National Stockpile (SNS) through local Emergency Management to the Wisconsin Division of Health.
5. The Unified Area Command will advise coroners, medical examiners and morticians of the need for standard precautions when caring for a deceased patient with influenza.
6. The Unified Area Command will work with Emergency Management to obtain refrigerator trucks, body bags and any other equipment needed for the deceased victims.

Operations Section:

1. Unified Area Command will urge medical providers to actively screen patients entering health care facilities.
2. Unified Area Command will urge that all pandemic influenza specimens must be submitted to a certified United States Department of Agriculture BSL 3+ laboratory and that the specimens should include one throat/nasopharyngeal swab in viral transport media for virus isolation and one throat/nasopharyngeal swab in no media for PCR testing.
    - A copy of the revised WSLOH "Enhanced Influenza Monitoring" requisition form should accompany each specimen.
    - Notify DPH at (608) 266-5326 prior to specimen submission.
3. Unified Area Command will urge all health care providers, including nursing homes and assisted living facilities to strictly adhere to Droplet Precautions.

4. Unified Area Command will urge all health care providers to limit visitors to their facilities.
5. The Unified Area Command with the Medical Advisor will provide technical assistance to LHA's in preparing for mass clinic delivery of vaccine or antivirals.
6. The Unified Area Command will communicate the expected delivery time of the SNS and assure distribution to LHA's and hospitals.
7. The Unified Area Command will oversee the activation of mass clinics throughout Milwaukee and Waukesha Counties and assure that all necessary supplies are available to those clinics.

Planning Section:

1. The Unified Area Command will offer guidance on the declaration and enforcement of isolation and quarantine.
2. Vaccination and/or prophylaxis needs will be assessed and reported to the Unified Area Command on an on-going basis.

Finance & Administration Section:

1. All LHAs and Unified Area Command to continue tracking of time and expenditures toward the unified effort.
2. Begin recording of documentation of forms.

Post pandemic Period

Technically, no Post pandemic Period is identified in the WHO Pandemic Plan; the cycle reverts back to the Interpandemic Period. However, this local plan addresses these essential activities.

Command & Control:

1. Unified Area Command will assure that appropriate personnel are debriefed.
2. Unified Area Command will complete an After Action Report and recommendations for changes in the Pandemic Influenza Plan.
3. Unified Area Command will demobilize.

Command Staff (Communication):

1. Participate in the debriefing process.
2. Assess the effectiveness of communication plan and make appropriate changes based on identified needs.

Logistics Section:

1. Participate in the debriefing process.
2. Assess effectiveness of surveillance plan and make appropriate changes.

Operations Section:

1. Determine the total amounts of vaccine and anti-viral medications ordered, shipped, administered and wasted.
2. Review the mass clinic plan to determine effectiveness.
3. Revise the Mass Clinic Plan.
4. Review Isolation & Quarantine activities.
5. Review Mass Fatality/Burial activities.

Finance & Administration Section:

1. Completion of financial accounting related to Pandemic.
2. Completion of necessary documentation related to Pandemic.